



Delta MCS 1800 Series Introduction

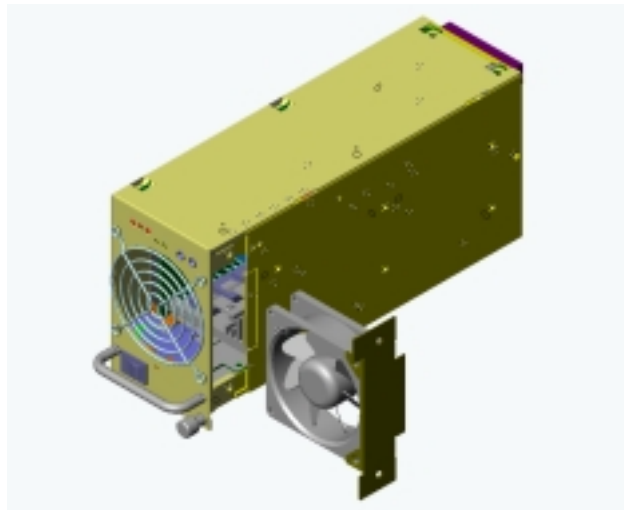


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MCS 1800 Series Rectifier



Features and Benefits

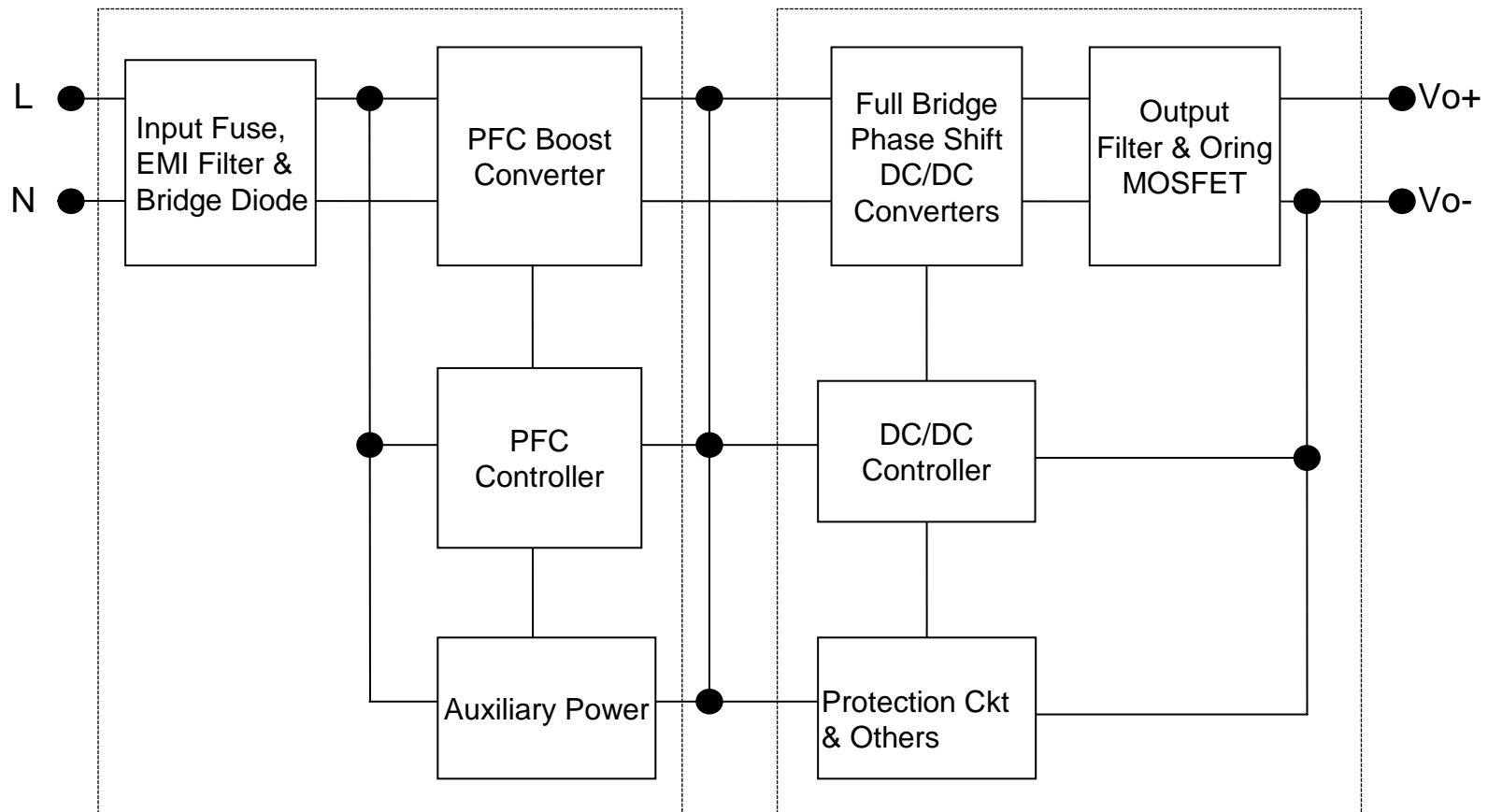
- -48V/30A, 24V/50A Output; Max. Power 1650W/1400W
- Wide Input Voltage Range (90V~300V)
- Power Factor Correction (>0.99)
- Hot-pluggable, All Connectors are at the rear
- Compact Size
 - 9.3W/in³ (48V) 7.9W/in³ (24V) Power Density
 - Dimension:83.6mm/2U(W)*132mm/3U(H)*298.7mm(D)
 - Light weight:3.3Kg (7.26lb)
 - Horizontal(2U)/Vertical(3U) Models Available
- High Efficiency: >91% (48V); 88% (24V)
- Fan cooling and Easy replaceable fan design
- Operation temp.: -5°C~+55°C
- UL/CUL, TUV/CE Certificated



MCS 1800 Series Rectifier—Block Diagram

 **PFC: Boost converter - 60 kHz**

 **DC/DC: Full Bridge Phase Shift DC/DC Converters - 90 kHz**





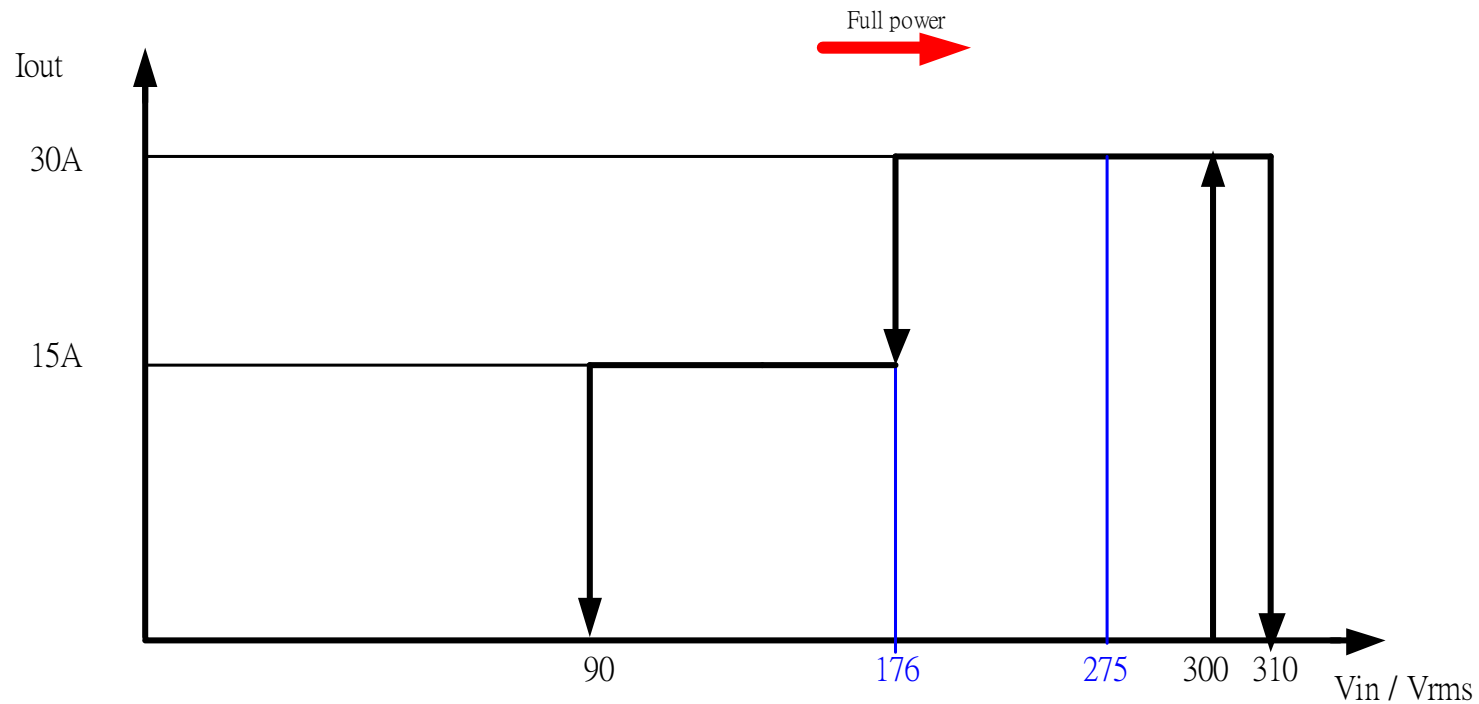
Additional Features

- DC output: 40 ~ 59.5Vdc / 20 ~ 29Vdc
- Current limit: 33A / 55A
- OVP: 59.5V \pm 0.5V / 29.5V \pm 0.5V(selective)
- Temp. range: -5°C - +55°C (55°C-65°C power derating)
- Load sharing: democratic



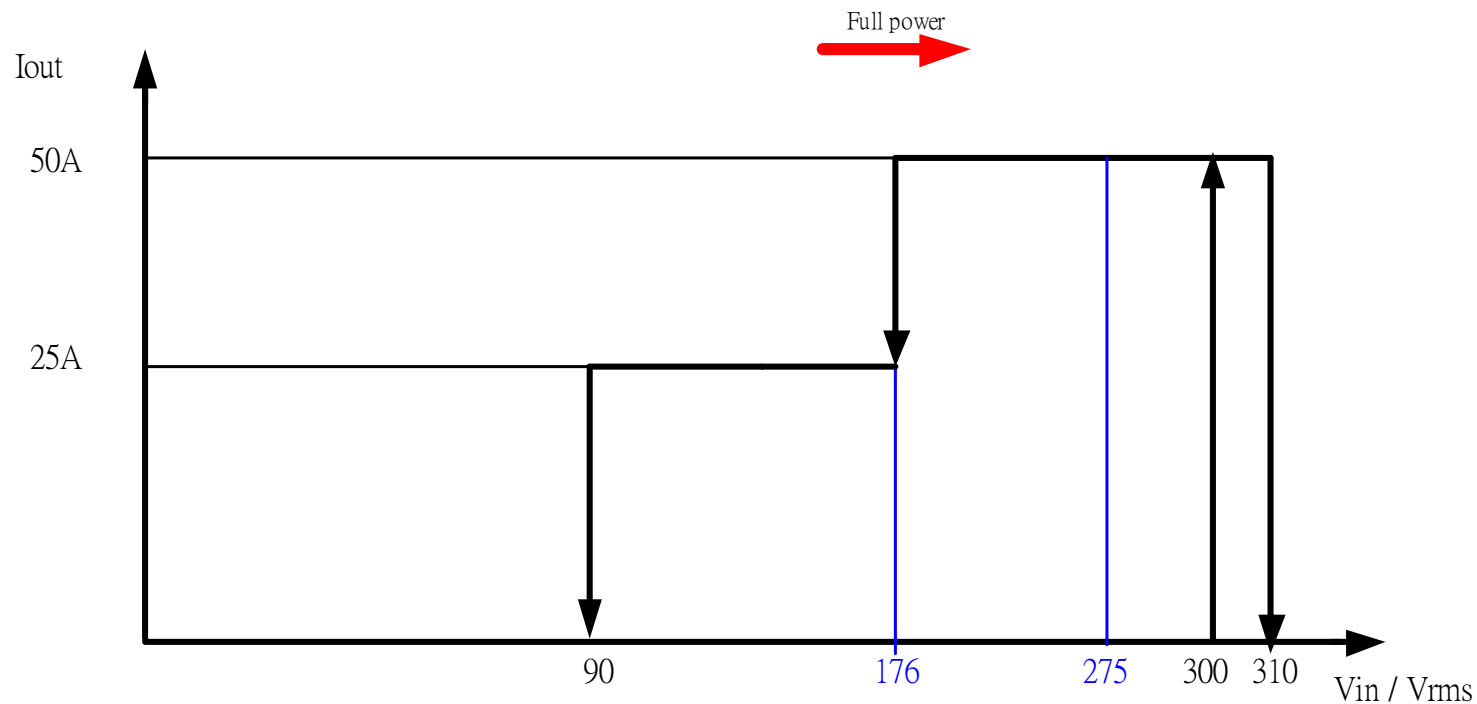
AC Input Characteristic(48V)

- Wide AC input voltage range with derating below 175 V
- Maximum input current 12 A
- Input fuse 20A fast (L and N)



AC Input Characteristic(24V)

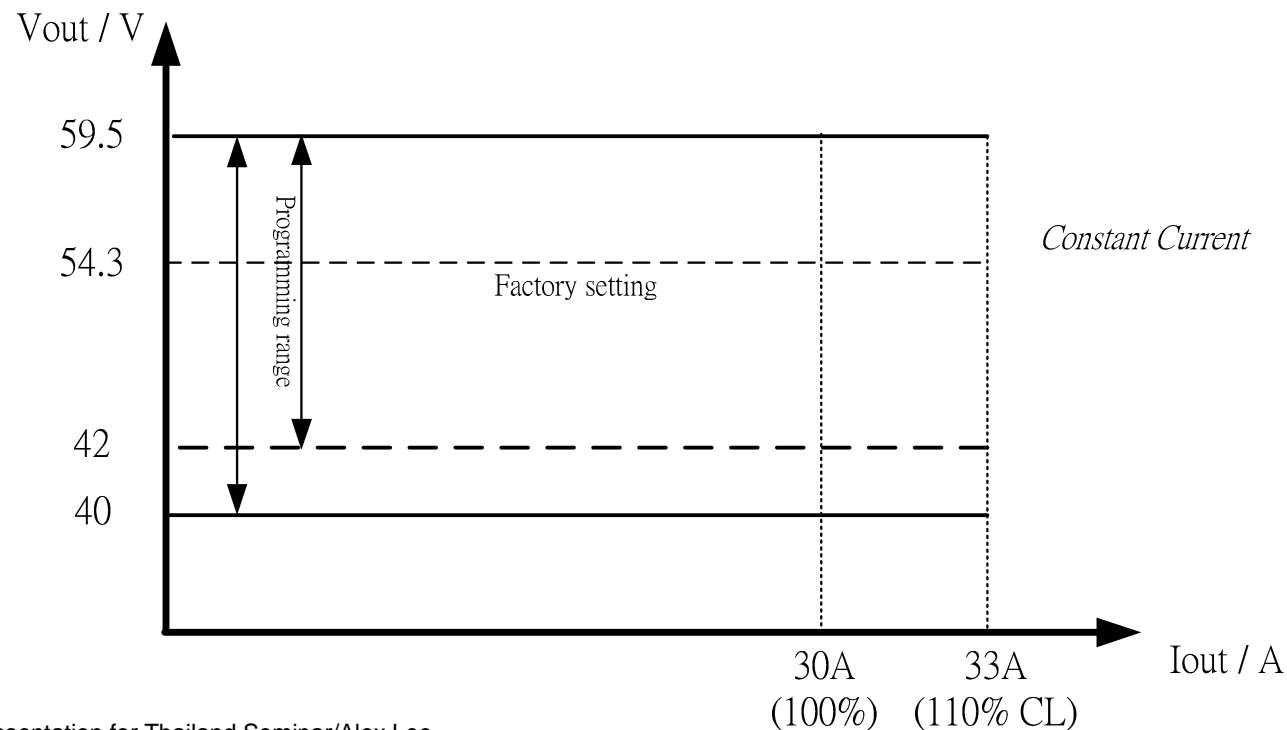
- Wide AC input voltage range with derating below 175 V
- Maximum input current 12 A
- Input fuse 20A fast (L and N)





DC Output Characteristic (48V)

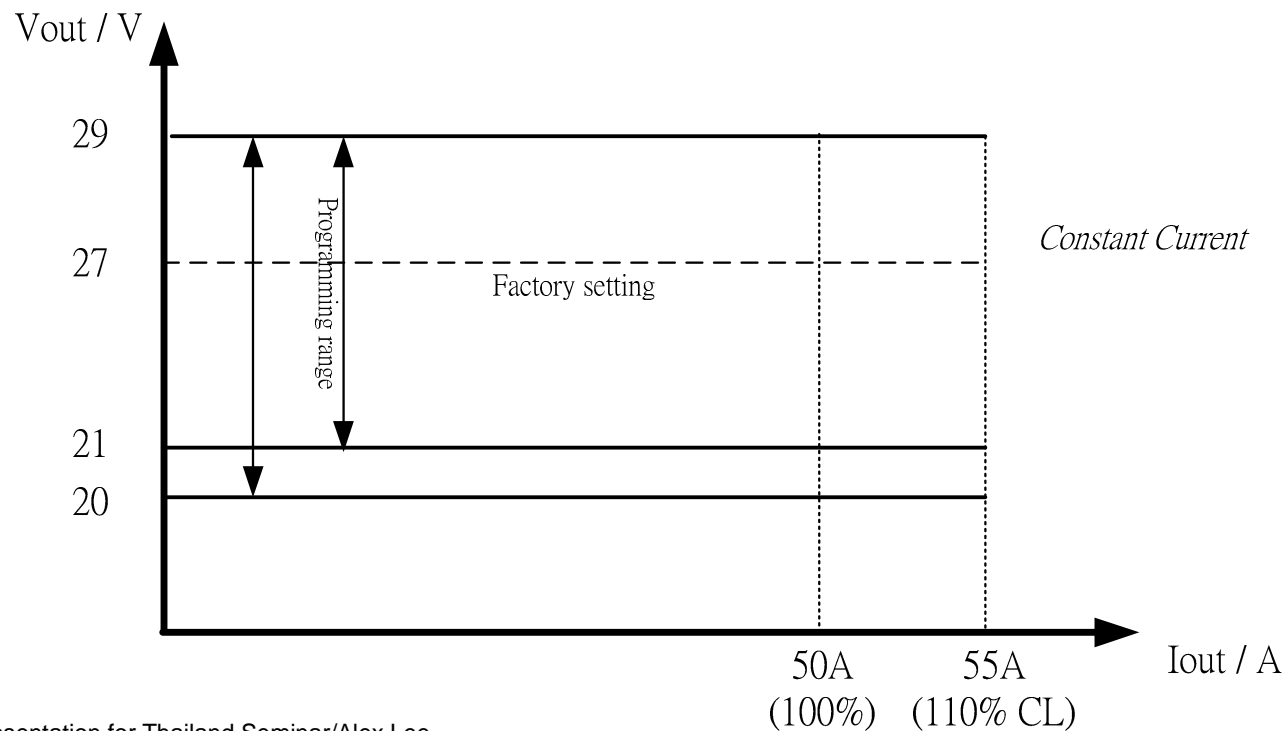
- Max. Output Power: 1650W(-48V)
- Constant Current Design (30A/Default); 110% Current Limited
- Output voltage 40 ... 59.5 Vdc
- Output fuse 70 A (- pole)





DC Output Characteristic (24V)

- Max. Output Power: 1400W(+24V)
- Constant Current Design (50A/Default); 110% Current Limited
- Output voltage 20 ... 29 Vdc
- Output fuse 100 A (- pole)



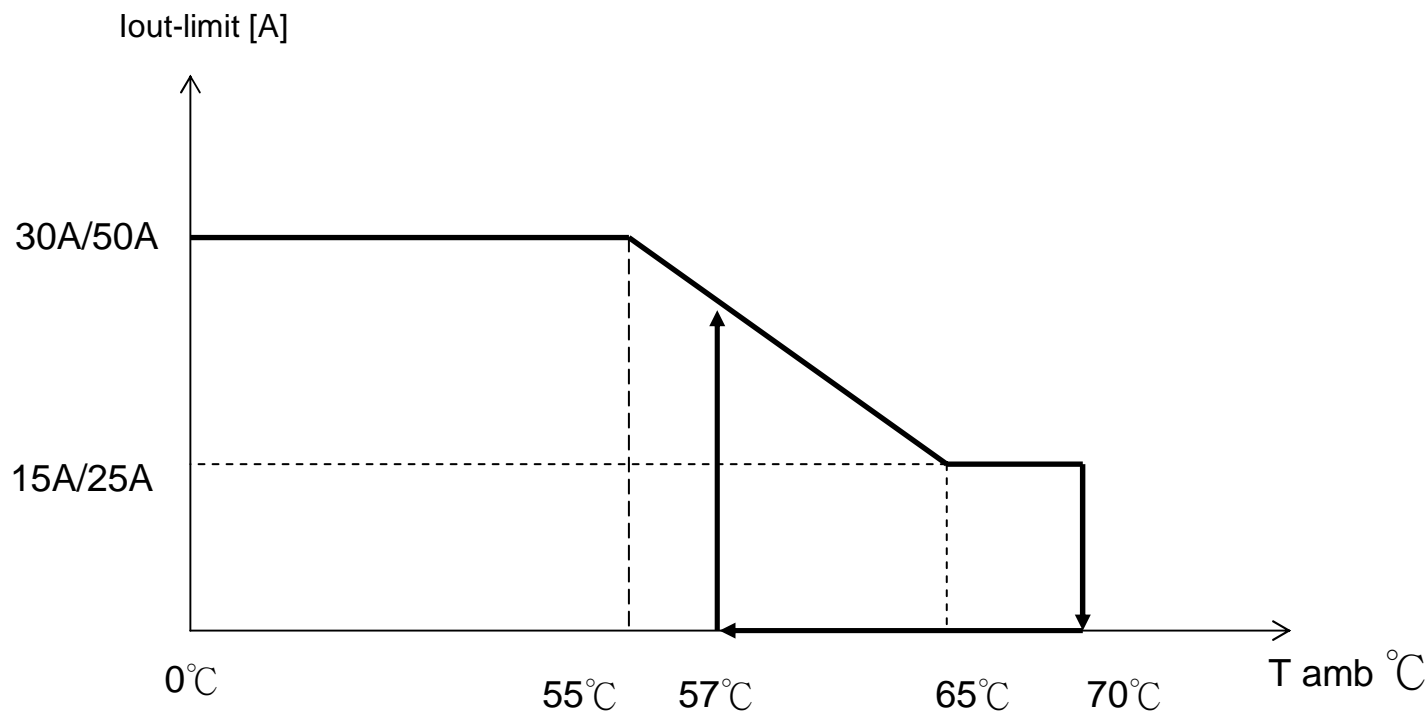


Thermal Management (CSU Control)

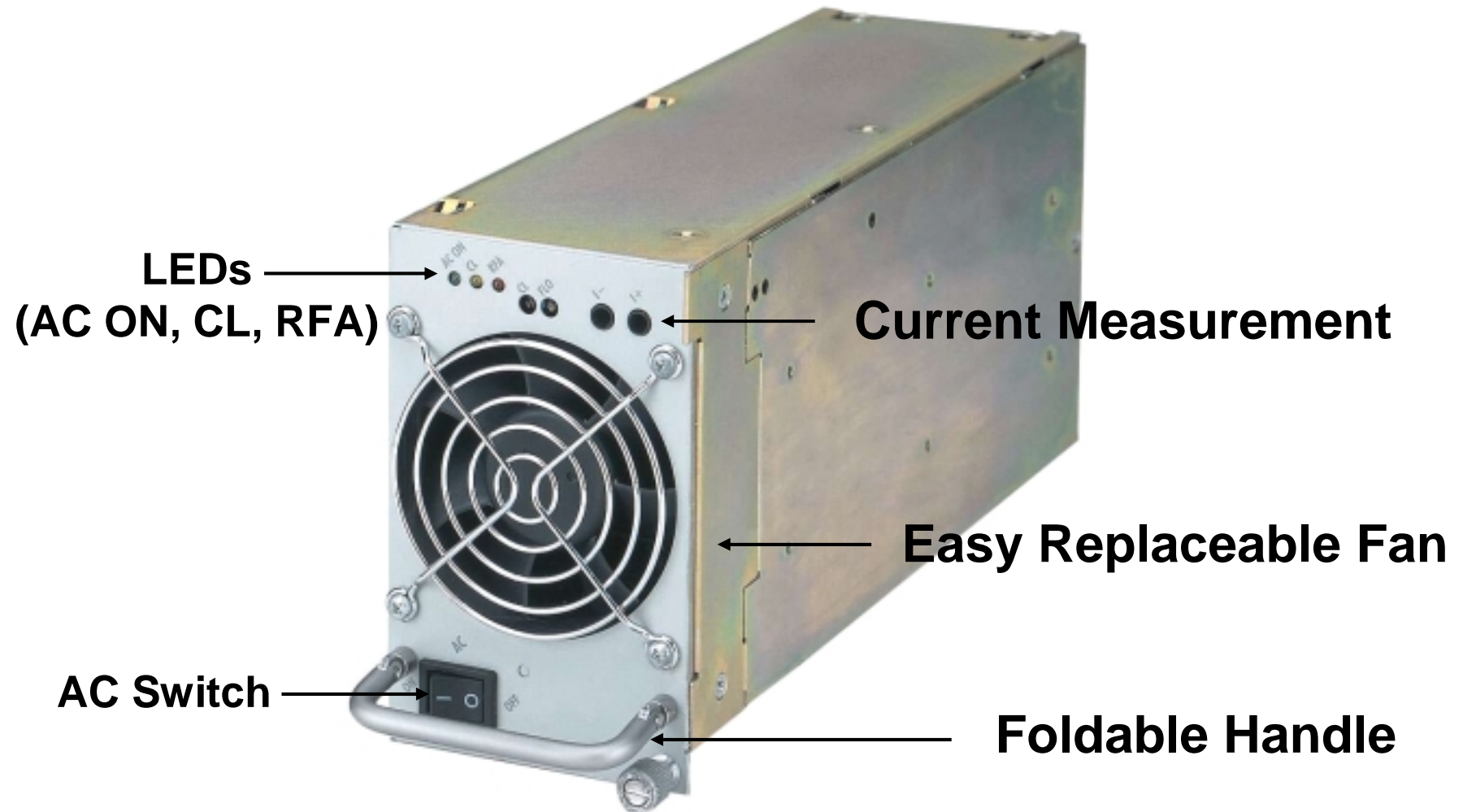
OTP = Over Temperature Protection

Two temperature sensors used for thermal management:

- **OTP control is based on internal temperature**
- **OTP protection is based on critical internal temperature**



Interface Introduction

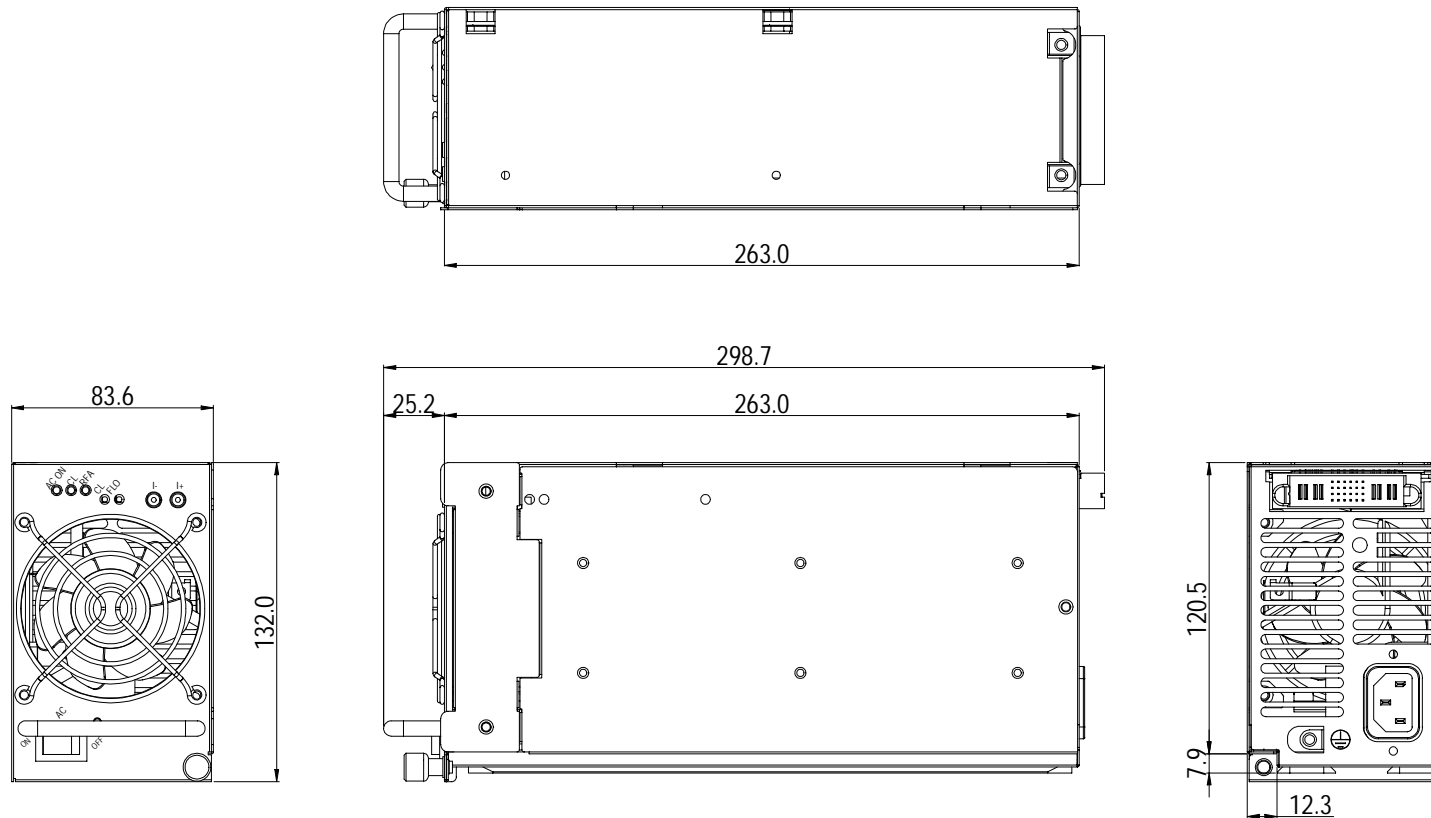


Interface Introduction





MCS 1800 Series Rectifier-- Dimensions



Protection

Conditions	Descriptions	Protections
Mains Over-Voltage	> 310V	Rectifiers shut down, rectifiers automatically restart after input voltage return to nominal line voltage range(<300V)
Mains Under-Voltage	<85V	Rectifiers shut down, rectifiers automatically restart after input voltage return to nominal line voltage range(>90V)
O/P voltage abnormal	>59.5V±0.5V/29.5±0.5V	Shutdown and Latch
Output Short Circuit		No damage to rectifiers, Cause no damage to SMR, SMR current limit, restart after fault release
Over-temperature	>70°C (Environment Temperature)	Shut down and recover when environment temperature < 57 °C
Fan Fail		Shutdown and Latch



Standard

Conditions	Specs	Standards
EMI	<ul style="list-style-type: none"> - FCC Class A - CISPR Class A 	<ul style="list-style-type: none"> - FCC Part 15 Subpart J - EN55022, BS6527
EMS <ul style="list-style-type: none"> - Voltage Fluctuation Flicker - Electrostatic Discharge (ESD) - Electromagnetic Compatibility(EMC)/Radiated Susceptibility - Electrical Fast Transient (EFT) - Conducted Susceptibility - Lightning/Surge 	<ul style="list-style-type: none"> - 15KV Air Discharge, 8KV Contact Discharge - 10V/m - 4KV - 10V/m - 6KV 	<ul style="list-style-type: none"> - EN 61000-3-3, EN 60555-3 - EN 61000-4-2 Level 4 , IEC 1000-4-2, IEC 801-2 Level 4 - IEC 1000-4-3, IEC 801-3 Level 3 - EN 61000-4-4 Level 4, IEC 1000-4-4, IEC 801-4 Level 4 - IEC 1000-4-6 Level 3 - IEC 1000-4-5 Level 4 & ANSI/IEEE C62.41-1991 B3



Standard

Conditions	Specs	Standards
Current Harmonic	- <5% at 220V full load	- EN 61000-3-2, EN 60555-2, IEC 1000-3-2 Class A
Insulation Resistance	- Input to output >2 M Ω (At 500Vdc) - Input to frame ground > 2 M Ω (At 500Vdc) - Output to frame ground >2 M Ω (At 500Vdc)	
Withstand voltage (High Pot)	- Input To Output 4242 Vdc 1 Minute (Or 3000 Vac 50Hz \leq 30mA) - Input to Frame Ground 2837 Vdc 1 Minute (Or 2006 Vac 50Hz \leq 30mA) - Output to Frame Ground 707 Vdc 1 Minute (Or 500 Vac 50Hz \leq 30mA)	
Acoustics	- 55 dBA at 1 meter in front of SMR	



MCS 1800 Series Rectifier -- Benchmark

Items	Delta MCS 1800	Tyco NP 1500	Emerson HD 4825-3
Power Output	1680W	1500W	1450W
AC Input	90-300V	85~300V	90~290V
PF	0.99	0.99	0.99
Cooling	Fan	Fan	Fan
Efficiency	91%	88%	90%
Temperature	-5~55°C	-5~55°C	-5~45°C
Weight	3kg	3.2Kg	3Kg
Power Density	9.3W/Inch3	7.63W/Inch3	6.1W/Inch3



**Delta MCS 1800 Series Introduction
(System)**





Delta MCS 1800 Series Power System

- Max. Capacity: -48V/180A; 24V/250A
- Complete Power Plant in One Power Shelf
- 19"/21"/23" Shelf Options
- Wide Input Voltage Range: 90V~300V
- Operation temp.: -5°C~+50°C;
~65°C with Power Derating
- Front Access, Operation, and Maintenance
- Remote Monitoring and Control
- Battery Management & Protection
- Different Configurations Available





MCS 1800 Series – System Major Function



Features/Functions	Smart CSU
Basic Function	Yes
Basic Supervision	Yes
Basic Battery Management Function	Yes
Remote Monitoring & Control	Yes
Maximum Rectifier Supervision	6
System Relays	8
LVDS/LVD Control	2
Temperature Sensors	1
Battery Current Sensor	1
Load Current Sensor	1
Event Log	Yes
SMS	Yes

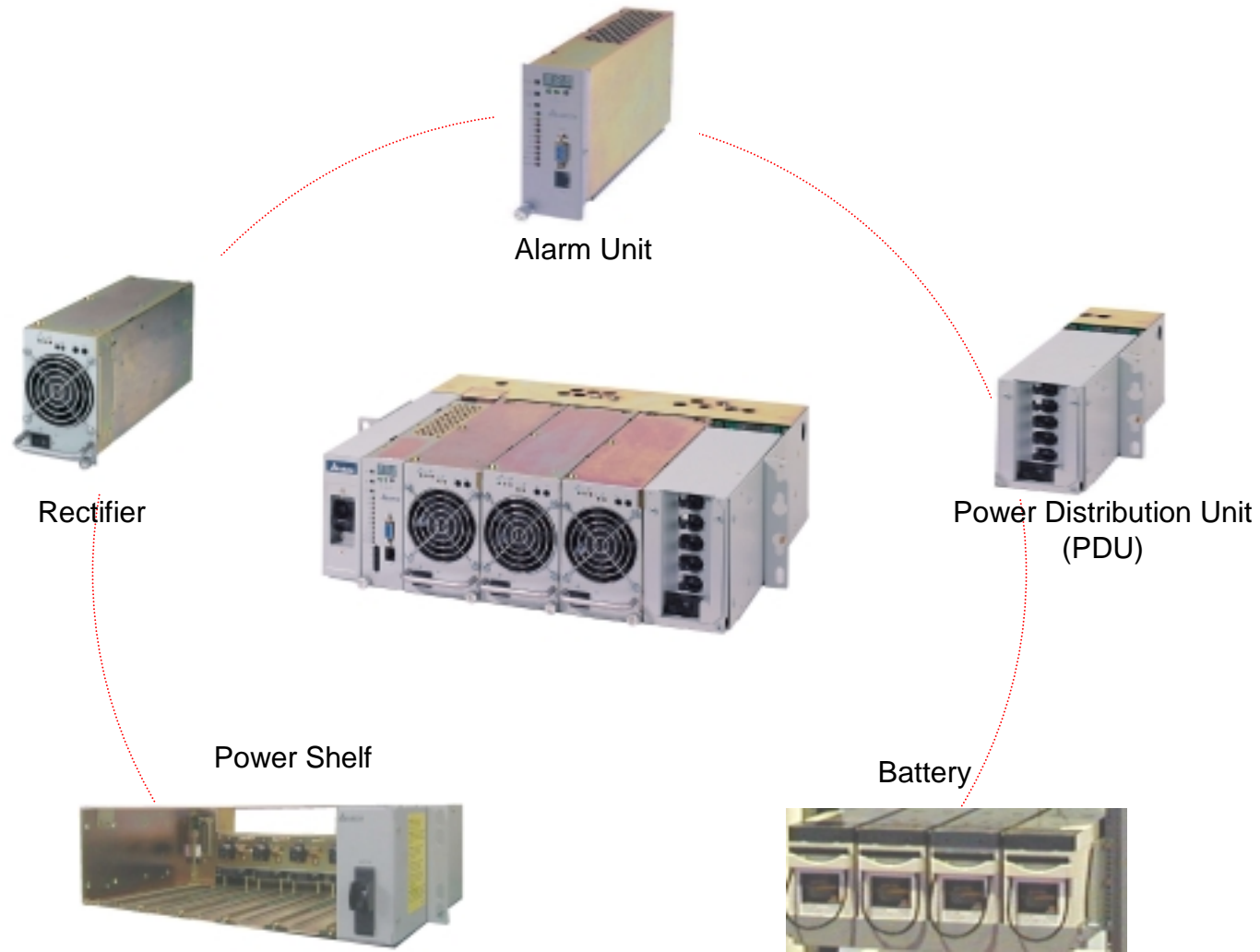
Basic Function: Adjustable output voltage, Load sharing, Indicators, Float/Equalizing charging modes, Voltage/Current/Temperature detection

Basic Supervision: Under-voltage, Over-voltage, Mains, Rectifier Fault, Fuse/Breaker , System voltage, System current, Local/Remote alarms

Basic Battery Management: Deep discharge protection, Temperature compensation, Limited charging current, Battery Capacity/Rough test



MCS 1800 Series Power System—Major Components





MCS 1800 Series– Available Configurations



2U Solution



PDU Embedded Solution 1



3U Solution



PDU Embedded Solution 2



6U Solution



Solutions with External PDU



MCS 1800 Series– Available Configurations

Standard Version



ES-48/90 JFA XX

- 48V/90Amps
- 19" W * 14"D * 3U H Shelf
- Smart System Controller
- UL 1950 Recognized
- PDU's option
 - 4 Plug in Breaker Position
 - LVBD



ES-48/120 JAA XX

ES-24/200 JAA XX

- 48V/90Amps or 24V/200Amps
- 19" W * 14"D * 3U H Shelf
- Smart System Controller
- UL 1950 Recognized



ES-48/90 JDA XX

- 48V/90Amps
- 19" W * 14"D * 2U H Shelf
- UL 1950 Recognized
- Smart System Controller
- Alarm Dry Contact O/P



MCS 1800 Series– Available Configurations

Standard Version



ES-48/180 JEA XX

- 48V/180Amps
- 21" W * 12.7"D * 10.4" H Shelf
- UL Recognized, TUV, CE.
- Smart System Controller



ES-48/120 JBA XX

ES-24/200 JBA XX

- 48V/120Amps or 24V/200A.
- 19" W * 14"D * 7U H Shelf
- TUV Certified (24V applying)
- Smart System Controller
- Priority LVD (Two LVD)
- Battery Breaker*2, O/P Breaker (L. Priority*2, H Priority*4)



ES-48/300 JCA XX

- 48V/300Amps
- 600mm W * 600mm D *1600mm H Cabinet
- UL 1801 & CE (On applying)
- Serial PDU's option
 - 23 Breaker Position Rail
 - 10 Breaker Position Rails + Battery Fuse
 - Battery space on bottom
 - LVBD



MCS 1800 Series– Available Configurations



ES-48/90 MDA XX

- 48V/90Amps
- 19" W * 11"D * 3U H Shelf (PDU included)
- UL 1950 Recognized,TUV,CE
- 1U PDU's on top side
 - 1 main output Breaker
 - 2 Battery Breakers
 - LVBD



ES-48/90 MDA XX

- 48V/90Amps
- 19" W * 11"D * 3U H Shelf (PDU included)
- UL 1950 Recognized,TUV,CE
- 1U PDU's on Bottom side
 - 1 main output Breaker
 - 2 Battery Breakers
 - LVBD



MCS 1800 Series – Power Distribution Unit Options



- Battery Breaker×1, 100A@ Single pole.
- DC output breaker×5, 30A Max.@ Single pole
- LVDS: 100A at Battery side.



- Battery Breaker×2, 100A@ Single pole.
- DC output breaker, 63Ax2, 25Ax2, 16Ax2
- LVDS: 100A at Battery side.

